

Appln. No. 10/707,422  
Docket No. 139805/GEM-0091

### **REMARKS / ARGUMENTS**

Applicant thanks the Examiner for the comments provided in Paragraphs 17 and 18 of the instant office action regarding the reconsideration and withdrawal of various prior rejections.

#### **Status of Claims**

Claims 1-32 are pending in the application and stand rejected. Applicant has amended Claims 1, 4, 12, 15, 20-25, and 27-30, leaving Claims 1-32 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §112, second paragraph, 35 U.S.C. §102(e), and 35 U.S.C. §103(a), have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

#### **Objections to the Claims**

Claims 4, 5, and 32 are objected to because of the following informalities: Claim 4 recites "a same of the opening".

Claims 20-25 are objected to because of the following informalities: "The device" should be replaced by --The system--.

Claim 28 is objected to because of the following informalities: Line 2, "detector response" should be replaced by --detector in response--.

Claims 29 and 30 are objected to because of the following informalities: Line 2, "a sensor device" should be replaced by --the sensor device--.

Applicant has amended Claim 4 to now recite, inter alia, "...the same opening...".

Applicant has amended Claims 21-25 and 28-30 to incorporate the suggestions provided by the Examiner to remove the informalities.

No new matter has been added, as antecedent support is provided in the specification as originally filed, such as in the claims, for example.

Appin. No. 10/707,422  
Docket No. 139805/GEM-0091

Accordingly, Applicant submits that the objections of claim informalities have been overcome, and respectfully requests reconsideration and withdrawal of these objections.

**Rejections Under 35 U.S.C. §112, Second Paragraph**

Claims 12-19 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention.

Applicant traverses this rejection for the following reasons.

Applicant respectfully disagrees with the Examiner, and submits that the claims particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In alleging failure to particularly point out and distinctly claim the subject matter which Applicant regards as the invention, the Examiner alleges "Claim 12 recites 'means for calculating a position of a focal spot'. However, claims 18 and 19 claim a control mechanism that calculates the focal spot movement. It is unclear whether or not they perform the same function". (Paper 01032006, page 3).

Applicant submits that the elements and limitations of Claims 12, 18, and 19 are distinct. Claim 12 recites, inter alia "...means for *calculating a position* of a focal spot...", while Claim 18 introduces and relates the element of "...a *control mechanism, in electronic communication with the means for calculating a position* of a focal spot." Claim 19 recites that the "... *control mechanism calculates* the focal spot *movement* and *compensates for detector response error* by focal spot movement".

Applicant respectfully submits that *means for calculating a position of a focal spot* (as in Claim 12) is distinct from *being in electronic communication with the means for calculating a position of a focal spot* (as in Claim 18), which is distinct from a *control mechanism that calculates movement of the focal spot* (as in Claim 19). In more fundamental terms, Applicant submits that calculation of a position is not the same as calculation of a movement (position is non-vectorial, while movement is vectorial).

Appl. No. 10/707,422  
Docket No. 139805/GEM-0091

Further, the control mechanism of Claim 19 additionally compensates for detector response error, which may result from the change in focal spot position.

Paragraph [0026] of the specification recites "The *detector elements* 56 and 58 [means for calculating a position of a focal spot] *monitor the position* of the x-ray focal spot 52 by *measuring the position* of x-ray beam falling on them."

Paragraph [0031] supports the distinction of the control mechanism: "Using the relationship between detector response and focal spot position measured as detector is integrated, it becomes possible for computer 36 [control mechanism] to *separate and to eliminate detector response change due to focal spot motion* from detector response change due to scanned patient".

As such, Applicant submits that "means for calculating a position of a focal spot", is not the same as means for "calculating the focal spot movement".

In view of the foregoing, Applicant submits that the claimed subject matter is described in such a manner that reasonably conveys to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention, and that such invention was particularly described and distinctly claimed. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection, which Applicant considers to be traversed.

#### **Rejections Under 35 U.S.C. §102(e)**

Claims 1-3 and 12-15 stand rejected under 35 U.S.C. §102(e) as being anticipated by Weinberg (U.S. Patent No. 6,628,984 B2, hereinafter Weinberg).

Claims 27-29 and 31 are rejected under 35 U.S.C. §102(e) as being anticipated by Popescu (U.S. Patent No. 6,652,143, hereinafter Popescu).

Applicant traverses this rejection for the following reasons.

Applicant respectfully submits that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, *in a single prior art reference.*" *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Moreover, "[t]he

Appln. No. 10/707,422  
Docket No. 139805/GEM-0091

identical invention must be shown in as complete detail as is contained in the \*\*\* claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, the single source must disclose all of the claimed elements “arranged as in the claim.” *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Dependent claims inherit all of the limitations of the respective parent claims.

Regarding Independent Claims 1, 12 and 27

Applicant has amended Claim 1 to now recite, inter alia:

“...a sensor device disposed in the housing... the sensor device being disposed in the housing such that an area of the x-ray allowed to fall on the sensor device changes in both position and size at the sensor device in response to movement of the focal spot in a plane parallel to the plane of the sensor device;

wherein a change in output signal of the sensor device is responsive to a change in position and size of the area of x-ray allowed to fall on the sensor device in response to the movement of the focal spot; and

wherein the change in output signal is a position indicator for the focal spot.”

Applicant has amended Claim 12 to now recite, inter alia:

“...wherein an area of the x-ray is allowed to fall on the means for calculating such that the area changes in both position and size at the means for calculating in response to movement of the focal spot in a plane parallel to the plane of the means for calculating;

wherein a change in output signal of the means for calculating is responsive to a change in position and size of the area of x-ray allowed to fall on the means for calculating in response to the movement of the focal spot; and

wherein the change in output signal is a position indicator for the focal spot.”

Appn. No. 10/707,422  
Docket No. 139805/GEM-0091

No new matter has been added, as antecedent support may be found in the specification as originally filed, such as at Paragraphs [0021] and [0023-0026], and at Figures 3 and 4, for example.

In alleging anticipation, the Examiner alleges that Weinberg discloses each and every element of Claims 1 and 12, including: "a sensor device (6) disposed in the housing such that an area of the x-ray allowed to fall on the sensor device *changes in both position and size* at the sensor device in response to the movement of the focal spot." (Paper No. 01032006, page 3) (Emphasis added).

Applicant respectfully disagrees that Weinberg discloses "such that an area of the x-ray allowed to fall on the sensor device *changes in both position and size* at the sensor device in response to the movement of the focal spot."

Applicant's invention is directed to a sensor device 55 that sees a portion of an x-ray that falls on the device where the portion seen changes in both position and size in response to movement of the focal spot *in a plane parallel to the plane of the sensor device*.

In Weinberg, Applicant finds disclosure of a camera 1 having a pinhole aperture 7 and a backplane 6, where the camera "...provides a two-dimensional image of radiation that enters the camera through an aperture 7 and strikes material on a backplane 6...". (Col. 4, lines 1-5 and 15-23).

In comparing Weinberg with the instant invention as amended, Applicant finds Weinberg to be absent disclosure of *an area of the x-ray allowed to fall on the sensor device changing in both position and size at the sensor device in response to movement of the focal spot in a plane parallel to the plane of the sensor device*.

Additionally, Applicant finds Weinberg to be absent disclosure of the claimed limitation: "...wherein a change in output signal of the sensor device is responsive to a change in position and size of the area of x-ray allowed to fall on the sensor device in response to the movement of the focal spot, and wherein the change in output signal is a position indicator for the focal spot."

In view of the foregoing, Applicant submits that Weinberg does not disclose each

Appin. No. 10/707,422  
Docket No. 139805/GEM-0091

and every claim element arranged as in the claim, and absent anticipatory disclosure in Weinberg of each and every element of the claimed invention arranged as in the claim, Weinberg cannot be anticipatory.

Regarding Independent Claim 27

Applicant has amended Claim 27 to now recite, inter alia:

“...calculating a position of the focal spot in response to an area of the x-ray beam allowed to fall on the sensor device changing in both position and size at the sensor device in response to movement of the focal spot in a plane parallel to the plane of the sensor device;

wherein a change in output signal of the sensor device is responsive to a change in position and size of the area of x-ray allowed to fall on the sensor device in response to the movement of the focal spot; and

wherein the change in output signal is a position indicator for the focal spot.”

No new matter has been added as discussed above.

Here, Applicant has amended Claim 27 to include limitations similar to those of amended Claims 1 and 12, and submits that for at least the same reasons as set forth above with regard to the allowability of Claims 1 and 12, Claim 27 is now allowable over Popescu.

More specifically, Applicant submits that Popescu does not disclose the amended limitations of: “...in response to an area of the x-ray beam allowed to fall on the sensor device changing in both position and size at the sensor device in response to movement of the focal spot in a plane parallel to the plane of the sensor device; wherein a change in output signal of the sensor device is responsive to a change in position and size of the area of x-ray allowed to fall on the sensor device in response to the movement of the focal spot; and wherein the change in output signal is a position indicator for the focal spot.”

Accordingly, Applicant submits that Popescu does not disclose each and every claim element arranged as in the claim, and absent anticipatory disclosure in Popescu of each and every element of the claimed invention arranged as in the claim, Popescu cannot be anticipatory.

Appln. No. 10/707,422  
Docket No. 139805/GEM-0091

Regarding Dependent Claims 15, 29 and 31 More Specifically

Applicant has amended Claim 15 to now recite, inter alia:

"...the means for calculating includes at least two detector elements arranged next to each other and the opening is sized so that the x-ray beam strikes more than one of the at least two detector elements, *but only a portion of each;*

*a change in output signal of each detector element is responsive to a change in position and size of the area of x-ray allowed to fall on each detector element in response to the movement of the focal spot; and*

*the change in output signal is a position indicator for the focal spot."*

Applicant has amended Claim 29 to now recite, inter alia:

"...receiving the x-ray beam at the sensor device disposed in the focal spot sensing device, wherein the sensor device includes at least two detector elements arranged next to each other *such that the x-ray beam passing through the opening is allowed to strike more than one of the at least two detector elements, but only a portion of each;*

*measuring a change in output signal of each detector element in response to a change in position and size of the area of x-ray allowed to fall on each detector element in response to the movement of the focal spot; and*

*determining the position of the focal spot in response to the change in output signal.*

Applicant submits that Claim 31 as first presented recites, inter alia:

"...allowing the x-ray beam *to fall on just a portion of each of the at least two detector elements."*

Here, Applicant claims a particular structural arrangement within the sensor device such that *each of* the detector elements are not fully illuminated by the x-ray beam, but are only partially illuminated.

In separately comparing Weinberg and Popescu with the claimed invention, Applicant finds each reference to be absent each and every element of the claimed invention arranged as claimed.

Appn. No. 10/707,422  
Docket No. 139805/GEM-0091

In view of the foregoing amendments and remarks, Applicant submits that the References do not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory. Accordingly, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §102(e) have been traversed, and requests that the Examiner reconsider and withdraw these rejections.

**Rejections Under 35 U.S.C. §103(a)**

Claims 20-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Weinberg.

Claims 4, 5, 6-8, 16, 23, 24 and 32 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Weinberg as applied to Claims 1, 4, 12, 20 above, and further in view of Levin et al. (U.S. Patent No. 6,114,703, hereinafter Levin).

Claims 9, 17, 25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Weinberg and Levin as applied to claims 8, 16 and 24 above, and further in view of Warren (U.S. Patent No. 6,362,481, hereinafter Warren).

Claims 1-4, 10-15, 18-23, 26-29, 31 and 32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Popescu in view of Sasaki.

Claims 5, 6, 8, and 9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Popescu and Sasaki as applied to Claims 1 and 4 above, and further in view of Warren.

Claim 30 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Popescu as applied to Claim 27 above, and further in view of Warren.

Applicant traverses these rejections for the following reasons.

Applicant respectfully submits that the obviousness rejection based on the References is improper as the References fail to teach or suggest each and every element of the instant invention arranged so as to perform as the claimed invention performs. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).



Appln. No. 10/707,422  
Docket No. 139805/GEM-0091

The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

Additionally, Applicant respectfully submits that obviousness cannot be supported by a proposed modification that would render the prior art invention being modified unsatisfactory for its intended purpose. *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984); MPEP §2143.01.

Dependent claims inherit all of the limitations of the respective parent claim and any intervening claim.

Regarding Examiner's Paragraph 11 and Claims 20-22

As discussed above regarding the rejections of Claim 1 and 12 under 35 U.S.C. §102(e), Applicant submits that Weinberg fails to teach each and every element of the claimed invention arranged as claimed in Claim 20.

For at least this reason, Applicant submits that Weinberg fails to provide a teaching or suggestion of each and every element of the instant invention arranged so as to perform as the claimed invention performs, and therefore cannot be used to establish a *prima facie* case of obviousness.

Furthermore, in alleging the obviousness of Claim 20, the Examiner acknowledges that "Weinberg failed to disclose *an x-ray source*" that produces an x-ray beam and has a focal spot, and remarks "Weinberg disclosed that a sensor device sensitive to other radiations could be used (column 12, lines 26-36). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an x-ray source, since the sensor device disclosed by Weinberg is capable of detecting x-rays". (Paper 01032006, page 5) (Emphasis added).

Applicant respectfully submits that one skilled in the art would not be motivated to modify Weinberg as suggested by the Examiner, as such a modification would render Weinberg unsatisfactory for its intended purpose.

In comparing the modification of Weinberg with the instant invention, Applicant finds Weinberg to disclose that "Gamma-ray probes are utilized in surgical procedures in which patients are administered radioactive substances prior to surgery... For example,

Appln. No. 10/707,422  
Docket No. 139805/GEM-0091

neuroendocrine tumors have been detected intraoperatively with nonimaging probes, even when the tumors were initially missed on magnetic resonance images ("MRI") and computer tomography ("CT") scans...Some investigators have used small gamma cameras instead of nonimaging probe detector heads." (Weinberg, col. 1, lines 24-25, 35-40, 65-66.

Applicant submits that incorporation of the claimed "*an x-ray source that produces an x-ray beam and has a focal spot...*" with the intraoperative gamma camera taught by Weinberg would render the gamma camera unsatisfactory for its intended purpose, as an x-ray source would distort the patient-emitted radiation, and therefore defeat the benefit of the gamma camera relative to CT imaging techniques, as taught by Weinberg. (A gamma camera used to find injected radiation emitted by tumors would not locate said tumors as effectively if an x-ray source was incorporated.) As such, Applicant submits that one skilled in the art would not be motivated to modify Weinberg by incorporating an *x-ray source that produces an x-ray beam and has a focal spot* as suggested by the Examiner.

Accordingly, Applicant submits that the Examiner's suggestion to modify Weinberg for the purpose of arriving at the claimed invention will render Weinberg to be unsatisfactory for its intended purpose. As such, Applicant submits that the modification of Weinberg as suggested by the Examiner cannot be used to establish a prima facie case of obviousness.

Regarding Examiner's Paragraphs 12 and 13

In addition to applying Weinberg against the claimed invention, the Examiner also applies Levin and Warren, such that Weinberg is now modified first by Levin (in Paragraph 12), and then by both Levin and Warren (in Paragraph 13) to allegedly render the claimed invention obvious.

Applicant respectfully disagrees.

In view of the claims under Examiner's Paragraphs 12 and 13 being dependent claims, Applicant not only agrees that Weinberg is deficient in teaching each and every element of the claimed invention, but that Weinberg is also deficient in teaching each and

Appin. No. 10/707,422  
Docket No. 139805/GEM-0091

every element of the respective parent claims as amended and as set forth above, and that the various references cited by the Examiner to reject the subject dependent claims are also deficient in curing the core deficiencies of Weinberg with respect to the parent claims. Accordingly, absent a teaching or suggestion of each and every element of the claimed invention arranged so as to perform as the claimed invention performs, a prima facie case of obviousness cannot be established.

For at least the reasons set forth above regarding the patentability of the parent claims, Applicant submits that the dependent claims under Examiner's Paragraphs 12 and 13 are patentable because the references fail to cure the deficiencies of Weinberg with respect to the absence of a teaching or suggestion of each and every element of the claimed invention arranged so as to perform as the claimed invention performs.

Regarding Claims 4, 23 and 32 More Specifically

Applicant has amended Claim 4 as set forth and discussed above, has amended Claim 23 to include limitations similar to those of amended Claim 4, and submits that Claim 32 as originally presented included similar limitations.

Here, Applicant claims a particular structural arrangement within the sensor device such that each of the detector elements are not fully illuminated by the x-ray beam, but are only partially illuminated.

In comparing the combination of references with the claimed invention, Applicant finds each combination to be absent a teaching or suggestion of each and every element of the claimed invention arranged so as to perform as the claimed invention performs.

Regarding Examiner's Paragraph 14

Applicant has amended independent Claims 1, 12, 20, and 27, as set forth and discussed above.

Applicant has also amended dependent Claims 4, 15, 23 and 29, as set forth and discussed above.

Applicant has also remarked above regarding the limitations of Claims 31 and 32.

In comparing the references with the claimed invention, Applicant not only agrees that Popescu is deficient in teaching each and every element of the claimed invention

Appl. No. 10/707,422  
Docket No. 139805/GEM-0091

arranged so as to perform as the claimed invention performs, but also submits that Sasaki fails to cure the deficiencies of Popescu.

Regarding Examiner's Paragraphs 15 and 16

In addition to applying Popescu against the claimed invention, the Examiner also applies Sasaki and Warren, such that Popescu is now modified first by Sasaki and Warren (in Paragraph 15), and then by Warren (in Paragraph 16) to allegedly render the claimed invention obvious.

Applicant respectfully disagrees.

In view of the claims under Examiner's Paragraphs 15 and 16 being dependent claims, Applicant not only agrees that Popescu is deficient in teaching each and every element of the claimed invention arranged so as to perform as the claimed invention performs, but that the combination of Popescu with Warren and Sasaki is also deficient in disclosing each and every element of the respective parent claims, as amended and set forth above, and that the various references cited by the Examiner to reject the subject dependent claims are deficient in curing the core deficiencies of Popescu with respect to the amended parent claims. Accordingly, absent a teaching or suggestion of each and every element of the claimed invention arranged so as to perform as the claimed invention performs, a prima facie case of obviousness cannot be established.

In view of the foregoing, Applicant submits that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done, as such a combination would render the references unsatisfactory for their intended purposes, fail to offer any reasonable expectation of success in combining the References to perform as the claimed invention performs, and disclose a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicant considers to be

Appn. No. 10/707,422  
Docket No. 139805/GEM-0091

traversed.

In light of the forgoing, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §112, second paragraph, 35 U.S.C. §102(e), and 35 U.S.C. §103(a), have been traversed, and respectfully requests that the Examiner reconsider and withdraw these rejections.

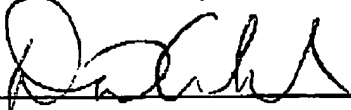
The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 07-0845.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above-identified Deposit Account.

Respectfully submitted,

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